

Laboratory Ergonomics: Pipetting

- Neck and shoulders in neutral position
 - ▶ Use and adjust lab chair whenever possible
 - ▶ Work with arms close to body to reduce muscle strain
 - ▶ Keep samples and instruments within easy reach
- Arms supported
- Minimize force
 - ▶ Use a pipette that fits comfortably in your hand
 - ▶ Pipettes with trigger mechanisms that decrease force
 - ▶ Use pipette tips that fit correctly and are easy to eject
 - ▶ Electronic pipettes whenever possible
- Try to avoid static position of upper body
 - ▶ Take micro-breaks of 3-5 minutes for every 30 minutes pipetting
 - ▶ Rotate pipetting activities with other lab tasks as possible



Laboratory Ergonomics: Microscopy

Neutral Body Position

- Adjust chair to correct height, back support and seat angle
- Position body as close to the microscope as possible—bring microscope toward edge of the table
- Use arm rests to support forearms while using the adjustment knobs
- Use footrest
- Ensure that there is adequate room under the work surface – will allow operator to pull chair up close to ocular



Static Position

- Do not use microscope more than 5 hours per day
- Avoid long, uninterrupted periods of microscope work—spread over the entire day
- Take frequent breaks and rotate with other tasks in the laboratory

Laboratory Ergonomics: Hoods

Awkward Body Position / Static Position

- Adjust chair to the correct height, back and neck support
- Position materials as close as possible to minimize extended reaching
- Ensure proper leg room—clear space as needed
- Footrest



Direct Pressure on Hard Surface

- Install Soft Edge closed-cell padding to the front edge of BSC – away from the downdraft
 - ▶ Serves as a padded arm rest
 - ▶ Decreases contact forces
 - ▶ Decreases chance of impinging nerves, tendons, blood vessels

Laboratory Ergonomics: Microtome

Body Position: Leaning / Bending / Reaching

- Adjust chair for back and neck support
- Consider alternative chair design
- Lower the workstation as able to keep arms close to body
- Minimize extended reaching whenever possible



Repetition

- Retrofit existing handle with an adaptor that will allow the operator to use the hand-wheel in a pistol grip position
 - ▶ Alleviate repetitive wrist flexion and extension

Direct Pressure

- Apply padding to front edge of the work surface to eliminate sharp edges and increase the amount of blood flow to hands

Small Animal Research Ergonomics

Tissue Harvest and Micro-Surgery Position / Posture

- ▶ Adjust chair height and back height to minimize neck and back strain / "hunched" neck, back, shoulders (tissue harvest)
- ▶ Adjust microscope to minimize awkward body position of neck and back (micro-surgery)
- ▶ Move chair in close to bench as possible and use footstool for support
- ▶ Use Soft-Edge arm rest for support
- ▶ Work with neutral elbow / forearm position: arms close to body to work with small animal tissues—angle at elbow 90 degrees or more



Grip Force / Finger Pressure

- ▶ Pinch Grip on Surgical Instruments
- ▶ Use small pieces of foam to decrease pinch grip—distributes force over a greater surface area and decreases compressive forces on soft tissue

Lighting

- ▶ Ensure adequate lighting in tissue harvest areas to properly see small tissues

Small Animal Research Ergonomics

Necropsy

- Awkward Body Position
 - ▶ "Hunched" body position of neck, shoulders and back: adjust chairs to provide back and neck support
 - ▶ "Stressed" Elbows and Forearms—elbows bent at 45 –60 degree angle with significant muscle tension in forearms: SoftEdge arm rest support and work with arms close to body, elbows at angle of 90 degrees or greater
- Pinch Grip on Surgical Instruments
 - ▶ Use small pieces of foam to decrease pinch grip
 - ▶ Distribute force over a greater surface area and decrease compressive forces on soft tissue



Injections and Oral Gavage

- ▶ Repeatedly twisting forearms: grasping animal and rotating hand/ arm
- ▶ Pinch grip on tail
- ▶ Elevation of arm (drawing up, injection, gavage)
- ▶ "Hunched" neck and shoulders
- ▶ Aim to perform work at neutral height/ waist level